



# Volunteer Lake Assessment Program Individual Lake Reports

## MOUNTAIN LAKE, LOWER, HAVERHILL, NH

### MORPHOMETRIC DATA

Watershed Area (Ac.):	2,318	Max. Depth (m):	9	Flushing Rate (yr <sup>-1</sup> )	4.1	Year	Trophic class	KNOWN EXOTIC SPECIES
Surface Area (Ac.):	60	Mean Depth (m):	3.8	P Retention Coef:	0.5	1991	OLIGOTROPIC	
Shore Length (m):	2,000	Volume (m <sup>3</sup> ):	917,000	Elevation (ft):	774	2006	OLIGOTROPIC	

### TROPHIC CLASSIFICATION

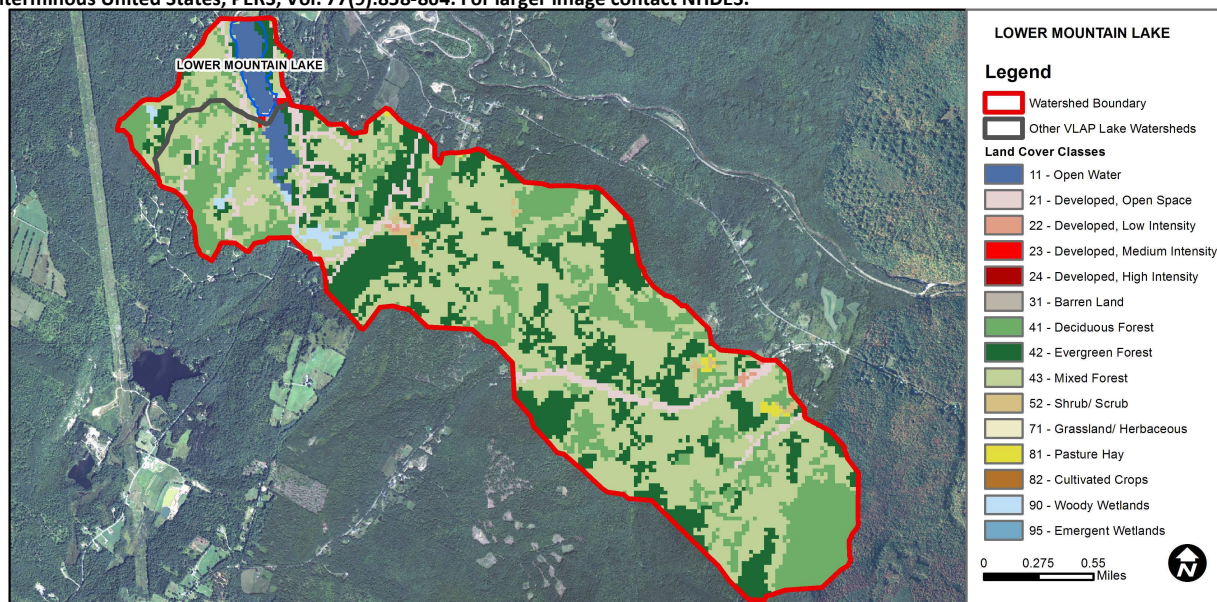
### KNOWN EXOTIC SPECIES

The Waterbody Report Card tables are generated from the 2012 305(b) report on the status of N.H. waters, and are based on data collected from 2001-2011.

Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	>/=5 samples and median is >threshold.
	pH	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	D.O. (mg/L)	Very Good	At least 10 samples with 0 exceedances of criteria.
	D.O. (% sat)	Slightly Bad	>10% of samples exceed criteria by a small margin (minimum of 2 exceedances).
	Chlorophyll-a	Slightly Bad	>5 samples and median is > threshold.
Primary Contact Recreation	E. coli	Good	Geometric means < criteria; however at least 1 exceedance of the single sample criteria occurred.
	Chlorophyll-a	Very Good	At least 10 samples with 0 exceedances of criteria.

### WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	2.4	Barren Land	0.05	Grassland/Herbaceous	0
Developed-Open Space	4.95	Deciduous Forest	21.32	Pasture Hay	0.33
Developed-Low Intensity	0.17	Evergreen Forest	22.51	Cultivated Crops	0
Developed-Medium Intensity	0.13	Mixed Forest	46.42	Woody Wetlands	0.78
Developed-High Intensity	0	Shrub-Scrub	0.55	Emergent Wetlands	0.12



# VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

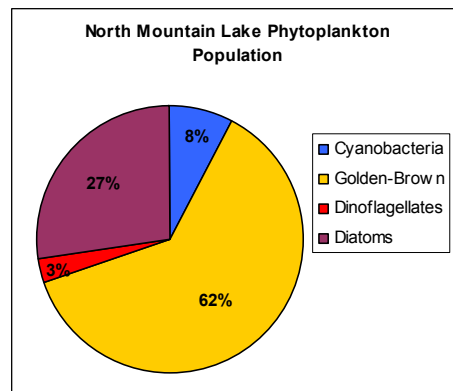
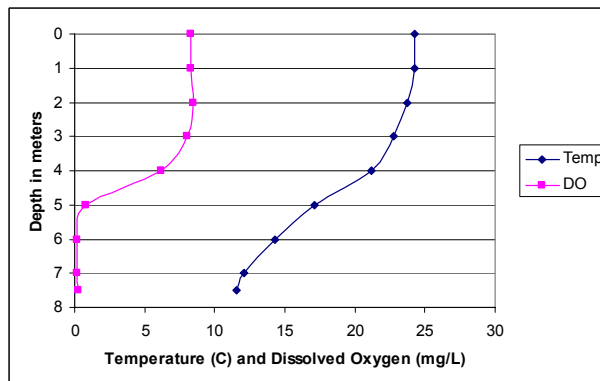
## MOUNTAIN LAKE, NORTH, HAVERHILL, NH

### 2012 DATA SUMMARY

#### OBSERVATIONS AND RECOMMENDATIONS (Refer to Table 1 and Historical Deep Spot Data Graphic)

- CHLOROPHYLL-A:** Chlorophyll levels were slightly elevated in July and greater than the NH lake median. Chlorophyll levels have been markedly higher since 2007. Historical trend analysis indicates chlorophyll levels tend to fluctuate from year to year.
- CONDUCTIVITY/CHLORIDE:** Conductivity levels were slightly elevated and greater than the NH lake median.
- E. COLI:** E. coli levels were much less than state standards for public beaches.
- TOTAL PHOSPHORUS:** Epilimnetic (upper water layer) phosphorus levels were relatively low and less than the NH lake median. However, historical trend analysis indicates a significantly increasing (worsening) epilimnetic phosphorus level. The hypolimnetic (lower water layer) phosphorus level was slightly elevated, dissolved oxygen levels low, and turbidity elevated. This indicates that internal loading may occur when dissolved oxygen levels decrease and phosphorus is released from lake sediments.
- TRANSPARENCY:** Transparency has been much lower since 2007 (when phosphorus levels increased). Historical trend analysis indicates a significantly decreasing (worsening) lake transparency.
- TURBIDITY:** Epilimnetic turbidity was slightly elevated either due to the increased algal growth, or stormwater runoff from a prior rain event. Hypolimnetic turbidity was elevated likely due to natural processes and not sediment.
- pH:** pH levels tend to decrease to lower than desirable in the hypolimnion.
- RECOMMENDED ACTIONS:** The worsening phosphorus and transparency trends are concerning. Stormwater runoff and erosion of dirt roads may be contributing to the declining water quality. Inspect gravel and dirt roads for signs of erosion and implement best management practices outlined in the U.S. Forest Service's "Environmentally Sensitive Road Maintenance Practices for Gravel and Dirt Roads". Educate watershed residents on ways to reduce stormwater runoff from their properties utilizing DES' "NH Homeowner's Guide to Stormwater Management".

#### Dissolved Oxygen & Temperature Profile



Station Name	Table 1. 2012 Average Water Quality Data for NORTH MOUNTAIN LAKE							
	Alk.	Chlor-a	Cond.	E. Coli	Total P	Trans.	Turb.	pH
	mg/l	ug/l	uS/cm	#/100ml	ug/l	m	ntu	
						NVS		
Beach				12				
Deep Epilimnion	8.7	6.04	85.9		8	2.6	1.94	7.17
Deep Hypolimnion			102.8		15		6.53	6.42
Outlet			84.3		7		1.21	7.16

**NH Median Values:** Median values for specific parameters generated from historic lake monitoring data.

**Alkalinity:** 4.9 mg/L

**Chlorophyll-a:** 4.58 mg/m<sup>3</sup>

**Conductivity:** 40.0 uS/cm

**Chloride:** 4 mg/L

**Total Phosphorus:** 12 ug/L

**Transparency:** 3.2 m

**pH:** 6.6

**NH Water Quality Standards:** Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.

**Chloride:** < 230 mg/L (chronic)

**E. coli:** > 88 cts/100 mL – public beach

**E. coli:** > 406 cts/100 mL – surface waters

**Turbidity:** > 10 NTU above natural level

**pH:** 6.5-8.0 (unless naturally occurring)

#### HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation
Chlorophyll-a	Variable	Data fluctuate annually, but are not significantly increasing or decreasing.
Transparency	Degrading	Data significantly decreasing (worsening).
Phosphorus (epilimnion)	Degrading	Data significantly increasing (worsening).

This report was generated by the NH DES Volunteer Lake Assessment Program (VLAP). For more information contact:

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